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## Recent Work

### Title

Phenotypic microarray analysis of an obligate anaerobe, *Desulfovibrio vulgaris*

### Permalink

<https://escholarship.org/uc/item/95x568cn>

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### Publication Date

2004-12-14

## **Phenotypic microarray analysis of an obligate anaerobe, *Desulfovibrio vulgaris***

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Phenotypic Microarray™ analysis is a recently developed analytical tool to determine the phenotype of an organism. This technique can be useful to understand the growth changes of an organism when changing medium, temperature, or adding a stressor, or when testing mutant strains. The plates, which are commercially available from Biolog™ (Hayward, CA), consist of array of 20 plates. The first eight plates test a variety of metabolic agents, including electron donors, acceptors, and amino acids. Plates 9 and 10 cover a pH and osmotic stressors, while plates 11-20 contain a variety of inhibitors, including toxic agents and antibiotics. Techniques were developed to use these plates under anaerobic conditions to be able to culture and obligate anaerobe, *Desulfovibrio vulgaris*. To accomplish this the plates were set up in an anaerobic chamber and heat sealed in polyethylene bags containing an anaerobic sachet. Using this technique, anaerobic conditions were maintained in the plates for up to a week. Growth of the cells was measured by the increase in turbidity of the cells, which was correlated with both optical densities at 600 nm and total cell counts. Preconditioning of the cells and specialized media preparation are required for the different types of plates in order to get a valid phenotype. The plates have been successfully used to characterize the phenotype of the *Desulfovibrio vulgaris* ATCC strain and are currently being applied to mutant strains to provide rapid screening of mutant phenotypic changes, for rapid pathway analyses and modeling.